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NRO REVIEW COMPLETED

2668-67  
Copy 1 of 4  
5 October 1967

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MEMORANDUM FOR: Director for Operations, OSA  
ATTENTION : Special Action Staff, OSA  
SUBJECT : Quarterly Program Progress Report  
Deputy for Research and Development  
(July, August, September 1967)

Attached is the Deputy for Research and Development, OSA  
Quarterly Program Progress Report for July, August, and  
September 1967.



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Deputy for  
Research and Development  
Special Activities

Attachment:  
As stated

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A(P)D/R&D/OSA(5 Oct 67)

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QUARTERLY PROGRAM PROGRESS REPORT

Deputy for Research and Development

July, August, September 1967

I. AIRCRAFT SYSTEMS DIVISION

1. D/R&D briefed Dr. Flax, DNRO, on General R&D items proposed for the FY-68 budget.
2. D/R&D briefed Messrs. Fischer and Sorrell, Bureau of the Budget, on General R&D items proposed for the FY-68 budget.
3. First flight of the U-2R took place at EAFB on 28 August.
4. D/R&D received a proposal from the [ ]  
[ ] for reducing the induced drag of a high-altitude, sub-sonic aircraft. At the request of the DNRO, the proposal and supporting data were forwarded to his office.
5. Accompanied ORD to [ ] to provide technical support for ORD drone projects.
6. Briefed Dr. Lauderdale on General R&D items proposed for the FY-68 budget.
7. Briefed [ ] on the differences in payload capacity between the SR-71 and A-12 as cited in the [ ] Parangosky report.
8. Prepared a memo for Dr. Lauderdale on the differences between the SR-71 and the A-12.
9. Briefed [ ] on specific questions to raise at the SR-71/A-12 EXCOM meeting.
10. Supported the OSA effort in responses to numerous Dr. Flax and Dr. Hornig papers on the SR-71/A-12 debate.

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## II. PROPULSION DIVISION

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1. A visit was made by [ ] D/R&D representative [ ] PSD/D/R&D, to review cryogenic fueled air breathing aircraft propulsion systems with Pratt & Whitney Aircraft at the Florida Research & Development Center. The status of Pratt & Whitney's R&D efforts in methane

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2. Unfunded general studies of high altitude propulsion system concepts initiated on earlier visits to FRDC were reviewed including application of the J-58 engine to high altitude, subsonic missions through a modified compressor design and elimination of the afterburner.

3.

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4. A review of improved propulsion systems for possible high altitude reconnaissance applications was also conducted while at East Hartford.

5. This included possible performance growth of the J-75-P-13B through application of advanced cooled turbine techniques.

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### III. OX CART PAYLOAD

During this quarterly period a total of (40) camera configuration sorties were flown.

#### TYPE I

Twenty-eight (28) of these were with Type I, seven (7) of which were operational missions. There were two (2) failures. One a partial failure (camera operated for approx 30 min.) was due to an a/c inverter problem. The second failure (on Type I-G) was due to an overtension condition in film transport and intermittency in the electrical circuitry. The configuration (I-G) is back in ZI and undergoing thorough check and analysis.

#### TYPE IV

Twelve of the 40 sorties were flown with Type IV configurations. There were two failures. One was due to failure of take-up mechanism which caused film to jam the film transport system. The second failure was caused by a tab on the shutter blade assembly breaking and a fragment jamming a component of the film transport system.

### IV. LIFE SUPPORT

#### A. OX CART

During this period the following life support items received final testing and evaluation and were approved for use in the OXCART life support system:

1. Improved URT-21 Beacon Installation with Manual On/Off Selector. The improved bracket for installation allows quick removal of the beacon from the parachute by the pilot after reaching the ground. The manual selector allows the pilot to select an "automatic on" position over friendly territories, which will allow the beacon to be automatically activated upon ejection. When penetrating denied/unfriendly territory, the

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pilot selects the "beacon off" position, which does not allow the beacon to be activated upon ejection. This system is now installed in all parachutes used for BLACK SHIELD operational flights.

2. Sleeping Bag-Packed Seat Cushion with Personnel Lowering Device. This modification includes a mummy-type sleeping bag suitable for survival in NVN and a personnel lowering device to allow the pilot to reach the ground if the parachute is entangled in trees. The lowering device has a 150 ft. lowering capability and was specifically developed for use by aircrews in SEA. Four operational cushions and two training units have been provided to the OXCART program.
3. New Life Raft. The open-end life raft for easier boarding was approved for use and 16 rafts (8 yellow and 8 green) have been ordered. The first units will be delivered in early November.
4. Emergency Visor Heat Battery Pack. This unit, which will provide visor defogging/defrosting during bailout, has now been completely evaluated and tested. It was approved for installation in the OXCART parachute back pan and has been installed in BLACK SHIELD operational parachutes. All parachutes will be equipped in the near future, as battery packs are completed.
5. Solid Piece Oxygen Controller Fittings. All suit controllers now have solid piece oxygen hose fittings to prevent breakage during buffeting or ejection.
6. Stabilization Parachute Pack Modifications. Modification kits have been delivered to the field for incorporation. The modifications were made to improve pack opening and to smooth out the pack/headrest interface.

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B. All other developmental efforts, including the pressure suit flotation improvements, have been dropped or placed in a hold status because of the planned OXCART phase-out.

C. IDEALIST

1. U-2C Program

a. Q-445 Seat Kit Improvements. A proposal was received during this period for modifying and updating the Q-445 seat kit/emergency oxygen system. Providing funds can be made available, this effort will be initiated. The modifications include replacing both the ship-to-kit and the personal leads quick disconnects to improve safety and reliability; replace the oxygen system for more capacity but with less bulk; reduce the lid thickness to accommodate a sleeping-bag packed seat cushion; and to provide an adjustable press-to-test button to allow the pilot to inflate his pressure suit to any extent in flight for comfort reasons.

b. NOMEX Coveralls. A program to replace all pressure suit outer coveralls with nomex coveralls was initiated during this period. Fire/flame protection during ejection, crash landings, or cockpit fires in flight or on the ground is the reason for this effort. Funds have been requested and a request for purchase has been made.

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c. [ ] Pressure Suit Training: Subject training was conducted by the ASD/R&D life support officer during this period at the Castle AFB, California Physiological training facility.

2. U-2R Program

a. Interim Pressure Suits. Modified OXCART Pressure suits were provided for LAC test pilots [ ] At

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present, it is planned that LAC test pilots will not receive any other pressure suits in order to reduce costs and insure an adequate number of suits for Project Pilots.

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- b. Interim Support. Additional personnel (1 Firewel tech rep and 1 David Clark tech rep) were provided to Detachment G to assist in supporting the full pressure suit program for the U-2R. A maintenance van was provided [ ] as the nucleus of an interim support facility. A housing-type trailer complex was also provided and converted into a work, storage, and prebreathing facility for the Detachment G life support section. AGE and test equipment was purchased, borrowed or transferred to provide adequate support for the interim pressure suits.
- c. AGE and Test Equipment. Production of a full complement of equipment for full pressure suit/liquid oxygen support at Detachment G is nearly complete. All items will be delivered prior to the end of November 1967. Production of items for Detachment H and/or fly-away kits is being held pending allocation of funds for this purpose [ ]
- d. S-1010 Pilots Protective Assembly. The prototype S-1010 PPA was completed on 29 September and will receive full factory testing and evaluation during the period from 2 - 13 October 1967. Initial functional and subjective evaluation will be conducted by the ASD/R&D life support officer during the period 16 - 20 October utilizing the Firewel Co. Altitude Chamber. The flotation system of the S-1010 was evaluated by the ASD/R&D life support officer in a lake at Worchester, Massachusetts on 22 September 1967. The flotation system is excellent and a marked improvement over previous systems. During late October or early November the prototype S-1010 will be displayed and discussed at

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both Headquarters and Detachment G for the benefit of all interested individuals.

- e. Training. The initial group of life support personnel from Detachment G completed factory conducted training on the S-1010 PPA. In addition, the Firewel Co. tech rep received full pressure suit AGE and test equipment training during this period. Additional training programs will be conducted in late October 1967 and in early January 1968. A life support equipment training program for IDEALIST pilots is being formulated jointly by ASD/R&D and Detachment G Life Support personnel at the present time.

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V. AIRCRAFT FLIGHT TEST AND OPERATIONAL TRAINING SUMMARY\*  
(JULY, AUGUST, SEPTEMBER 1967)

<u>AIRCRAFT</u>	<u>FLIGHTS</u> <u>J-A-S</u>	<u>TIME</u> <u>J-A-S</u>	<u>TOTAL</u> <u>FLIGHTS</u>	<u>TOTAL</u> <u>TIME</u>
121	11	27:44	297	362:24
122	2	2:11	162	177:12
123	-	-	78	136:10
124	17	30:40	574	1013:55
125	-	-	203	334:50
126	-	-	104	169:16
127	11	28:30	219	406:00
128	6	11:45	203	391:05
129	18	35:05	238	351:34
130	13	31:05	185	344:18
131	12	26:30	136	241:55
132	10	19:03	162	286:00
133	-	-	9	8:17
	100	212:33	2570	4222:56

\* Includes Ferry Flights and Operational Missions

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